

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

YOUNG H. KIM, ET AL.

CASE NO.: CL2207USNA

APPLICATION NO.: 10/700,857

CONFIRMATION NO.: 6319

GROUP ART UNIT: 1711

EXAMINER: THAO T. TRAN

FILED: NOVEMBER 4, 2003

FOR: ARTICLES COMPRISING AQUEOUS DISPERSIONS OF POLYUREAURETHANES

APPEAL BRIEF PURSUANT TO 37 C.F.R. §41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Mail Stop Appeal Brief - Patents

Sir:

This is an appeal to the Board of Appeals from the Final Office Action mailed March 12, 2007, in which the Examiner finally rejected claims 1-29 of the above-identified applications. Appellant timely filed a Notice of Appeal on June 7, 2007. Therefore, the due date for filing the Appeal Brief is November 7, 2007, with the accompanying Petition for a Two-Month Extension of time.

As required by 37 C.F.R. §41.37, a single copy of this brief is being filed with the filing fee of \$510.00. Please charge the fee to Deposit Account No. 50-3223.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Invista North America S.à r.l., a *société à responsabilité limitée*, incorporated under the laws of Luxembourg, having acquired rights from E.I. DuPont De Nemours and Company by way of an assignment recorded in the United States Patent and Trademark Office at Reel 015286, Frame 0708, having acquired rights from the inventors by way of an assignment recorded in the United States Patent and Trademark Office at Reel 014608, Frame 0536.

2. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known to the Appellant or Appellant's legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.

3. STATUS OF THE CLAIMS

Claims 1-29 are currently pending in the application. Claims 1-29 stand finally rejected. The rejections of Claims 1-29 are being appealed.

4. STATUS OF AMENDMENTS

No amendments have been made to the claims subsequent to the final rejection.

5. SUMMARY OF CLAIMED SUBJECT MATTER

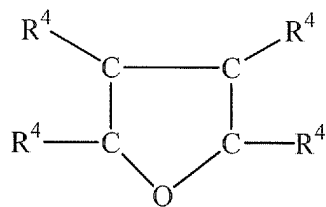
The three independent claims are 1, 10, and 20.

Claim 1 (supported in the specification at p. 4, line 21 to p. 5, lines 2) is directed to a film prepared from a urea/urethane polymer comprising (a) repeating units derived from a hydroxy-terminated copolymer prepared from tetrahydrofuran and one or both of an alkylene oxide and a cyclic acetal, and (b) repeating units derived from a polyisocyanate;

wherein the urea/urethane polymer contains less than about 2 mole percent of urea units described by the formula $-R - N(R^2) - C(O) - N(R^2) - R^1 -$;

wherein R is an aromatic hydrocarbon radical, R^1 is an aliphatic hydrocarbon radical, and R^2 is H or an amide group that is described by the formula $-C(O) - N(R^2) - R -$; and

wherein the tetrahydrofuran is described by the formula



in which any one of the R⁴'s may be a C₁ to C₄ alkyl radical with the remaining R⁴'s being hydrogen.

Claim 10 (supported in the specification at p. 5, lines 4-13) is directed to a film prepared from an ionomeric urea/urethane polymer comprising (a) repeating units derived from an aliphatic polyether polyol having a molecular weight of about 700 to about 1500, and (b) repeating units derived from a polyisocyanate,

wherein the urea/urethane polymer contains less than about 2 mole percent of urea units described by the formula $-R - N(R^2) - C(O) - N(R^2) - R^1 -$;

wherein R is an aromatic C₆ - C₂₀ hydrocarbon radical, R¹ is an aliphatic C₁ - C₂₀ hydrocarbon radical, and R² is H or an amide group that is described by the formula $-C(O) - N(R^2) - R -$.

Claim 20 (supported in the specification at p. 5, lines 15-24) is directed to a film prepared from an ionomeric urea/urethane polymer comprising (a) repeating units derived from an aliphatic polyester polyol, and (b) repeating units derived from a polyisocyanate. The polymer contains less than about 2 mole % of urea units described by the formula $-R - N(R^2) - C(O) - N(R^2) - R^1 -$, where R¹ is a C₁-C₂₀ aliphatic hydrocarbon radical.

In any of claims 1, 10, and 20, for R¹ to be an aliphatic hydrocarbon radical, either an aliphatic diamine such as ethylenediamine as a chain extender or an aliphatic polyisocyanate must be used. The present invention has achieved films which are suitable for use in gloves prepared from an ionomeric urea/urethane polymer without the use of these diamine chain extenders.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- I. Are claims 20-22 and 24-29 anticipated under 35 U.S.C. §102(b) by U.S. Patent No. 6,764,475 to Bialke et al. ("Bialke")?
- II. Is claim 23 obvious under 35 U.S.C. §103(a) over Bialke?
- III. Are claims 1-19, 23, and 25 obvious under 35 U.S.C. §103(a) over Bialke in view of U.S. Patent No. 5,008,328 to Soto et al. ("Soto") or U.S. Patent No. 3,404,131 to Taub ("Taub")?

7. ARGUMENTS

- I. Claims 20-22 and 24-29 are not anticipated under 35 U.S.C. §102(b) by U.S. Patent No. 6,764,475 to Bialke et al. ("Bialke").

Bialke is not directed to polyurethane films. Bialke is instead directed to polymers and polymer blends which include step (1) a polymer in latex or dispersion form based on alkylene oxide and (2) one or more other polymer latexes or dispersions which may include polyurethane. Bialke refers to U.S. Patent No. 6,017,997 to Snow et al. ("Snow") for the disclosure of water-borne polyurethane, polyurea, and poly(urethane-urea) dispersions ("PUD"). Bialke then generically describes some components which may be included in PUDs. For example at column 8, lines 42-44, Bialke states, "Generally PUD comprises polymerized units of diisocyanate and hydrophilic moiety, together with diol, diamine, or both diol and diamine." Bialke does not disclose the preparation of a polyurethaneurea dispersion prepared without the addition of a diamine chain extender and does not disclose that water may be used as a chain extender. As stated above, the limitation of urea concentration can be achieved where no diamine chain extender is used.

The Examiner has relied on the generic teaching of "PUD" for allegedly showing that an ionomeric urea/urethane polymer is prepared without the use of a diamine chain extender as in the present claims. However, none of the elements of Claim 20 are present in this disclosure. Specifically, Bialke does not disclose an ionomeric urea/urethane polymer having the claimed urea concentration limitation.

The Examiner has stated that it is inherent that the urea concentration of claim 20 is inherent in Bialke. Appellants respectfully traverse. The urea concentration of the present claims is not inherent in Bialke. The only teaching of a diamine chain extender in Bialke is that PUDs generally include a diamine chain extender. This is in contrast to the present invention where a diamine chain extender must be intentionally limited or excluded to achieve the claimed urea concentration.

In order for any reference to anticipate a claim, all elements of the claim must either be disclosed literally or inherently in the reference. The Examiner has asserted that Bialke discloses the films of Claim 20 because the urea concentration would have been inherent.

The standard for inherency is very clear. "Inherency...may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981). [citations omitted]. In other words, the element that is asserted to be inherent must necessarily and inevitably be present in the disclosure.

Based on the PUD disclosure included in Bialke, there is no disclosure or teaching of a polyurethaneurea prepared in the absence of a diamine chain extender. The only teaching is that diamine chain extenders are generally included in polyurethane dispersions. Furthermore, there is no disclosure that water may be used as the chain extender in preparation of an ionomeric urea/urethane composition, as an alternative to the diamine chain extender. The urea concentration of Claim 20 is not inevitably present and, therefore, not inherent in Bialke due to the facts that: (1) Bialke provides no disclosure of a PUD prepared in the absence of a diamine chain extender, (2) the only chain extenders that Bialke discloses are aliphatic diamine chain extenders (column 9, lines 12-15), and (3) Bialke fails to teach water as a chain extender..

Moreover, it is possible that one would look to the source of the PUD information disclosed in Bialke, for further teaching of the diamine chain extender. As stated above, the PUD disclosure is from Snow. In Snow, it is very clear that a chain extender is required. Specifically, Snow states at column 2, line 62 to column 3, line 3:

The polyurethane comprises the reaction product of (a) a polyisocyanate component; (b) an active hydrogen containing component, such as a polyol or a polyamide; and (c) a water-solubilizing compound having water-solubilizing groups to form an

isocyanate terminal prepolymer, which is neutralized by reaction with a tertiary amine, dispersed in water, and the reaction product is then ***chain extended by reaction with a primary or secondary amine***. (emphasis added).

One following these teachings set forth in Snow, would include a diamine chain extender in a urea/urethane composition and would be outside the claimed urea concentration of Claim 20.

Since Bialke fails to disclose the claimed urea concentration, Bialke fails as a proper reference under Section 102. Reconsideration and withdrawal of the rejections of Claim 20 and Claims 21-22 and 24-29 which depend therefrom are respectfully requested.

II. Claim 23 is not obvious under 35 U.S.C. §103(a) over Bialke.

The Examiner has stated that although the particular propionic acid included claim 23 is not disclosed by Bialke, it would have been obvious to substitute the propionic acid of the Bialke for the one in claim 23. However, the Examiner does not address any of the deficiencies of Bialke with respect to the lack of teaching of the urea concentration. Therefore, Appellants respectfully submit that Bialke fails to teach every element of claim 23. As such, Bialke fails to establish a *prima facie* case of obviousness. Reconsideration and withdrawal of the rejection in view of Bialke are respectfully requested.

III. Claims 1-19, 23, and 25 are not obvious under 35 U.S.C. §103(a) over Bialke in view of U.S. Patent No. 5,008,328 to Soto et al. ("Soto") or U.S. Patent No. 3,404,131 to Taub ("Taub")?

Soto and Taub are cited only for their inclusion of a copolymer of tetrahydrofuran and an alkylene oxide. However, Soto and Taub fail to overcome the deficiencies of Bialke as a proper anticipatory reference or establishing a *prima facie* case of obviousness for failing to disclose every element of the present claims.

Claims 1-19, 23, and 25 all have the common feature of including a polymer having a concentration of urea described by the formula $-R-N(R^2)-C(O)-N(R^2)-R^1$, where R^1 is a C_1 - C_{20} aliphatic hydrocarbon radical of about 2 mole% or less. Bialke fails to disclose this element as set forth above. Neither Soto nor Taub provides any disclosure, teaching, or suggestion of the urea concentration. Furthermore, the urea concentration would not be provided by either Soto or Taub considering that both references provide for chain extension using a diamine chain extender. As such both Soto and Taub are outside the urea concentration range as set forth in the claims.


Since the combination of Bialke with either Soto or Taub fails to teach every element of the present claims, Appellants respectfully submit those reference fail to establish a *prima facie* case of obviousness with respect to claims 1-19, 23, and 25. Therefore, reconsideration and withdrawal of the rejections under Section 103 are appropriate and respectfully requested.

CONCLUSION

In view of the remarks set forth above, reconsideration and withdrawal of the rejections are appropriate and respectfully requested. Appellants submit that the present claims are patentably distinct over the art and in allowable form. Early allowance is, therefore, solicited. If there are any questions regarding this response, they may be directed to the undersigned attorney.

Date: 11/6/07

Respectfully submitted,


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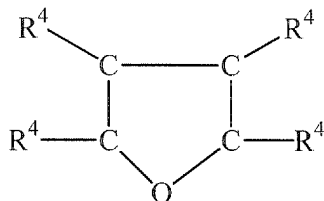
8. CLAIMS APPENDIX

1. (original) A film prepared from a urea/urethane polymer comprising (a) repeating units derived from a hydroxy-terminated copolymer prepared from tetrahydrofuran and one or both of an alkylene oxide and a cyclic acetal, and (b) repeating units derived from a polyisocyanate;

wherein the urea/urethane polymer contains less than about 2 mole percent of urea units described by the formula $-R - N(R^2) - C(O) - N(R^2) - R^1 -$;

wherein R is an aromatic hydrocarbon radical, R^1 is an aliphatic hydrocarbon radical, and R^2 is H or an amide group that is described by the formula $-C(O) - N(R^2) - R -$; and

wherein the tetrahydrofuran is described by the formula



in which any one of the R^4 's may be a C_1 to C_4 alkyl radical with the remaining R^4 's being hydrogen.

2. (original) A film according to Claim 1 wherein the polyisocyanate is selected from the group consisting of toluene diisocyanate, methylene diphenyldiisocyanate and polymethylene polyphenylisocyanate.

3. (original) A film according to Claim 1 wherein the alkylene oxide is selected from the group consisting of 1,2-propylene oxide and ethylene oxide.

4. (original) A film according to Claim 1 wherein the alkylene oxide is ethylene oxide.

5. (original) A film according to Claim 1 wherein each R^4 in the tetrahydrofuran is hydrogen.

6. (original) A film according to Claim 1 wherein each R^4 in the tetrahydrofuran is hydrogen, the hydroxy-terminated copolymer is prepared from an alkylene oxide, and the alkylene oxide is ethylene oxide.

7. (original) A film according to Claim 1 wherein the urea/urethane polymer contains less than about 1 mole percent of the described urea units.

8. (original) A film according to Claim 1 wherein the urethane polymer further comprises repeating units derived from an ionic compound or a potentially ionic compound.

9. (original) A film according to Claim 1 that is prepared from an aqueous dispersion of the urea/urethane polymer of Claim 1 and a surfactant.

10. (original) A film prepared from an ionomeric urea/urethane polymer comprising (a) repeating units derived from an aliphatic polyether polyol having a molecular weight of about 700 to about 1500, and (b) repeating units derived from a polyisocyanate, wherein the urea/urethane polymer contains less than about 2 mole percent of urea units described by the formula $-R - N(R^2) - C(O) - N(R^2) - R^1 -$;

wherein R is an aromatic $C_6 - C_{20}$ hydrocarbon radical, R^1 is an aliphatic $C_1 - C_{20}$ hydrocarbon radical, and R^2 is H or an amide group that is described by the formula $-C(O) - N(R^2) - R -$.

11. (original) A film according to Claim 10 which comprises repeating units derived from an ionic compound or a potentially ionic compound.

12. (original) A film according to Claim 11 wherein the ionic compound or potentially ionic compound comprises a hydroxy-carboxylic acid of the general formula $(HO)_x R^7 (COOH)_y$, wherein R^7 represents a straight or branched hydrocarbon radical containing 1 to 12 carbon atoms, and x and y each independently represents values from 1 to 3.

13. (original) A film according to Claim 11 wherein the ionic compound or potentially ionic compound comprises 2,2' dimethanolpropionic acid.

14. (original) A film according to Claim 10 wherein the polyisocyanate is selected from the group consisting of toluene diisocyanate, methylene diphenyldiisocyanate and polymethylene polyphenylisocyanate.

15. (original) A film according to Claim 10 wherein the polyether polyol is described by the formula $\text{HO} - [(\text{CR}^5\text{H})_m - \text{O} -]_n - \text{H}$, wherein R^5 is hydrogen, a halogen or a C_1 to C_4 alkyl radical; m is 3 or 4; and n is in the range of about 8 to about 20.

16. (original) A film according to Claim 15 wherein R^5 is hydrogen.

17. (original) A film according to Claim 10 wherein the polyether polyol has a molecular weight in the range of about 900 to about 1150.

18. (original) A film according to Claim 10 wherein the urea/urethane polymer contains less than about 1 mole percent of the described urea units.

19. (original) A film according to Claim 10 that is prepared from an aqueous dispersion of the urea/urethane polymer of Claim 10 and a surfactant.

20. (original) A film prepared from an ionomeric urea/urethane polymer comprising (a) repeating units derived from an aliphatic polyester polyol, and (b) repeating units derived from a polyisocyanate,

wherein the urea/urethane polymer contains less than about 2 mole percent of urea units described by the formula $-\text{R} - \text{N}(\text{R}^2) - \text{C}(\text{O}) - \text{N}(\text{R}^2) - \text{R}^1$;

wherein R is a $\text{C}_6 - \text{C}_{20}$ aromatic hydrocarbon radical, R^1 is a $\text{C}_1 - \text{C}_{20}$ aliphatic hydrocarbon radical, and R^2 is H or an amide group that is described by the formula $\text{C}(\text{O}) - \text{N}(\text{R}^2) - \text{R} -$.

21. (original) A film according to Claim 20 which comprises repeating units derived from an ionic compound or a potentially ionic compound.

22. (original) A film according to Claim 21 wherein the ionic compound or potentially ionic compound comprises a hydroxy-carboxylic acid of the general formula $(\text{HO})_x\text{R}^7(\text{COOH})_y$, wherein R^7 represents a straight or branched hydrocarbon radical containing 1 to 12 carbon atoms, and x and y each independently represents values from 1 to 3.

23. (original) A film according to Claim 21 wherein the ionic compound or potentially ionic compound comprises 2,2' dimethanolpropionic acid.

24. (original) A film according to Claim 20 wherein the polyisocyanate is selected from the group consisting of toluene diisocyanate, methylene diphenyldiisocyanate and polymethylene polyphenylisocyanate.

25. (original) A film according to Claim 20 wherein the polyester polyol is a dihydroxy-terminated polymer selected from the group consisting of an ethylene adipate, a butylene adipate, an ethylene/butylene adipate, and mixtures thereof.

26. (original) A film according to Claim 20 wherein the urea/urethane polymer contains less than about 1 mole percent of the described urea units.

27. (original) A film according to Claim 20 that is prepared from an aqueous dispersion of the urea/urethane polymer of Claim 20 and a surfactant.

28. (previously presented) A film according to Claims 1, 10 or 20 that is fabricated in the form of a glove.

29. (original) A glove according to Claim 28 wherein the glove is not perforated or broken at the point of contact between the thumb and forefinger after the thumb and forefinger have dipped in isopropyl alcohol and rubbed together for a time of about 30 to about 60 seconds.

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9. EVIDENCE APPENDIX

No additional evidence was submitted in this application including evidence pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132.

10. RELATED PROCEEDINGS APPENDIX

No related appeals or interferences are known to Appellant or Appellants' legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.